Patent claims

1. A method for the correction of signal distortions in an amplifier device (20), wherein a digital PWM modulator (17) is operated with a variable-frequency system clock (18).

2. The method as claimed in claim 1, wherein the following steps are performed:

producing a digital PWM reference signal (16) from PWM data (12) in a first PWM modulator (15), which is controlled with a predetermined system clock (14) and triggered at a predetermined PWM pulse rate (13);

producing a digital PWM signal (19) from the PWM data (12) in a second pulse width modulator (17), which is controlled with the variable-frequency system clock (18) and triggered at the predetermined PWM pulse rate (13);

amplifying the digital PWM signal (19) in the amplifier device (20);

determining an amplifier deviation (27) from the digital PWM reference signal (16) and an amplified digital PWM signal (23) in a summation device (25);

producing a controlled variable (29) from the amplifier deviation (27) in a control device (28);

feeding the controlled variable (29) to a control input of a variable-frequency device (30); and

producing the variable-frequency system clock (18) in the variable-frequency device (30).

3. The method as claimed in claim 2, wherein the PWM data (12) are produced from a digital signal (10) in a digital circuit (11).

4. The method as claimed in claim 3, wherein the PWM data (12) are produced in the digital circuit (11) from the digital signal (10), preferably a PCM-modulated digital audio signal, in such a way that with each clock of the predetermined PWM pulse rate (13) a quantized item of PWM information is calculated.

5. The method as claimed in one of the preceding claims 2 to 4, wherein the variable-frequency device (30) is a VCO or CCO, which is preferably likewise synchronized with the predetermined PWM pulse rate (13).

6. The method as claimed in one of the preceding claims 2 to 5, wherein the digital PWM reference signal (16) and/or the amplified digital PWM signal (23) pass(es) through a filter device (24; 26) before the amplifier deviation (27) is determined.

7. The method as claimed in one of the preceding claims, wherein the amplifier device (20) is designed with an H-bridge circuit and/or as a class-D amplifier.

8. The method as claimed in one of the preceding claims 2 to 7, wherein the control device (28) is designed in such a way that the controlled variable (29) sets the frequency of the variable-frequency device (30) such that the difference between the digital PWM reference signal (16) and the amplified digital PWM signal (23) becomes minimal.

9. The method as claimed in one of the preceding claims 2 to 8, wherein the amplified digital PWM signal (23) is fed to an acoustic sound transducer (32), preferably via a filter device (31), such as in particular a low-pass filter.

10. The method as claimed in claim 9, wherein a loudspeaker signal (33), preferably filtered via a further filter device (26), is likewise used for determining the amplifier deviation (27) from the digital PWM reference signal (16) and the amplified digital PWM signal (23).

11. The method as claimed in one of the preceding claims 2 to 9, wherein the variable-frequency system clock (18) is compared with the predetermined system clock (14) in a phase detector (34), in order to determine a phase difference (36), which is filtered in a filter device (35) and then added to the controlled variable (29).

12. The method as claimed in one of the preceding claims 2 to 9, wherein the variable-frequency system clock (18) is compared with the predetermined system clock (14) in a phase detector (34), in order to determine a phase difference (36), which is added to the controlled variable (29) and filtered in an additional filter device (35), in order to be applied to the control input of the variable-frequency device (30).

13. The method as claimed in claim 11, wherein the phase difference (36) of the variable-frequency device (30), preferably a VCO, is fed via a modulation input.

14. The method as claimed in one of the preceding claims, wherein the frequency of the variable-

frequency system clock (18) of the digital PWM modulator (17) is varied continuously over time.

15. The method as claimed in one of the preceding claims, wherein the frequency of the variable-frequency system clock (18) of the digital PWM modulator (17) is varied at discrete times.

16. A device for the correction of signal distortions in an amplifier circuit (20) with:

a first pulse width modulator (15) for producing a digital PWM reference signal (16) from PWM data (12), which modulator is controlled with a predetermined system clock (14) and triggered at a predetermined PWM pulse rate (13);

a second pulse width modulator (17) for producing a digital PWM signal (19) from the PWM data (12), which modulator is controlled with a variable-frequency system clock (18) and triggered at the predetermined PWM pulse rate (13);

the amplifier device (20) for amplifying the digital PWM signal (19);

a device (25) for determining an amplifier deviation (27) from the digital PWM reference signal (16) and an amplified digital PWM signal (23);

a control device (28) for producing a controlled variable (29) from the amplifier deviation (27); and

a variable-frequency device (30) for producing the variable-frequency system clock (18) from the controlled variable (29).